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USER'S MANUAL
(Preliminary)

SOSA-AXG5

XGA TFT LCD Analog-Digital Conversion Board

December. 1999

NEW COMM USA

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1. Product Overview

artistage SOSA-AXG5™, NEW COMM WORLD's XGA TFT LCD Analog-Digital Conversion board (AD board), accepts standard analog RGB and SYNC signals from various VGA controller board currently available in the marketplace. SOSA-AXG5™ supports XGA and lower resolutions at vertical refresh rates up to 75Hz. Lower resolution modes can be expanded to the maximum screen size through expansion algorithm. The user interface includes PHASE, CONTRAST, BRIGHTNESS, HORIZONTAL and VERTICAL position adjustment and etc.

Generally, the LCD based monitor emits less harmful rays, and does not require huge space. Moreover, the energy consumption of LCD monitor is remarkably little.
Thus CRT monitors will be rapidly replaced by LCD monitors, and NEW COMM WORLD continuously provides best quality Analog-Digital Conversion board which conforms to various market requirements.

2. Compatibility

•Connects directly to any standard CRT monitor output :
D-SUB 15 pin connector (standard)
Straight 13pin flat connector (option)
•Supports IBM PC, Mac and NEC PC98
•Supports DPMS for monitor power management
•Supports DDC1/2B
•TFTLCD panels : XGA (1024x768 pixels) Samsung, Hyundai, LG and etc.
•TFTLCD panel interface : TTL (standard) LVDS and PanelLink (option)

IMPORTANT NOTE

- FRAME FREQUENCY (or REFRESH RATE) SETTING

SOSA-AXG5 is designed to run under the frame frequency (or refresh rate) up to 75Hz. You may free from invisible display problem which can be caused by mismatch of your display card and SOSA-AXG5 monitor in the initial connection to your new PC. It is highly recommended for you to change the frame frequency of your PC to 60Hz, because TFTLCD monitor shows best performance in frame frequency 60Hz. To change it, you can use the diskette included in the product.

INSTALLATION of NEWCOMM WORLD TFTLCD Monitor Display Driver in Windows 95 / 98

Installation instructions using the Add New Hardware Wizard

1. Start Windows 95 or 98.
2. Insert the disk labeled NEWCOMM WORLD.INF into a floppy drive.
3. Click the **Start** button. Click the **Setting** and **Control Panel** menu item.
4. From the **Control Panel** folder select the **Add New Hardware** icon.
5. Follow the instructions. When you are asked to 'Select the type of hardware you want to install' select **Monitors**.
6. Press the **Have disk** button from the next dialog.
7. Select the **'A' drive** from the dialog. Press OK. The wizard will automatically install the Display Drivers.
8. Follow the additional instructions given by the wizard.

Installation instructions using the Display Properties dialogs

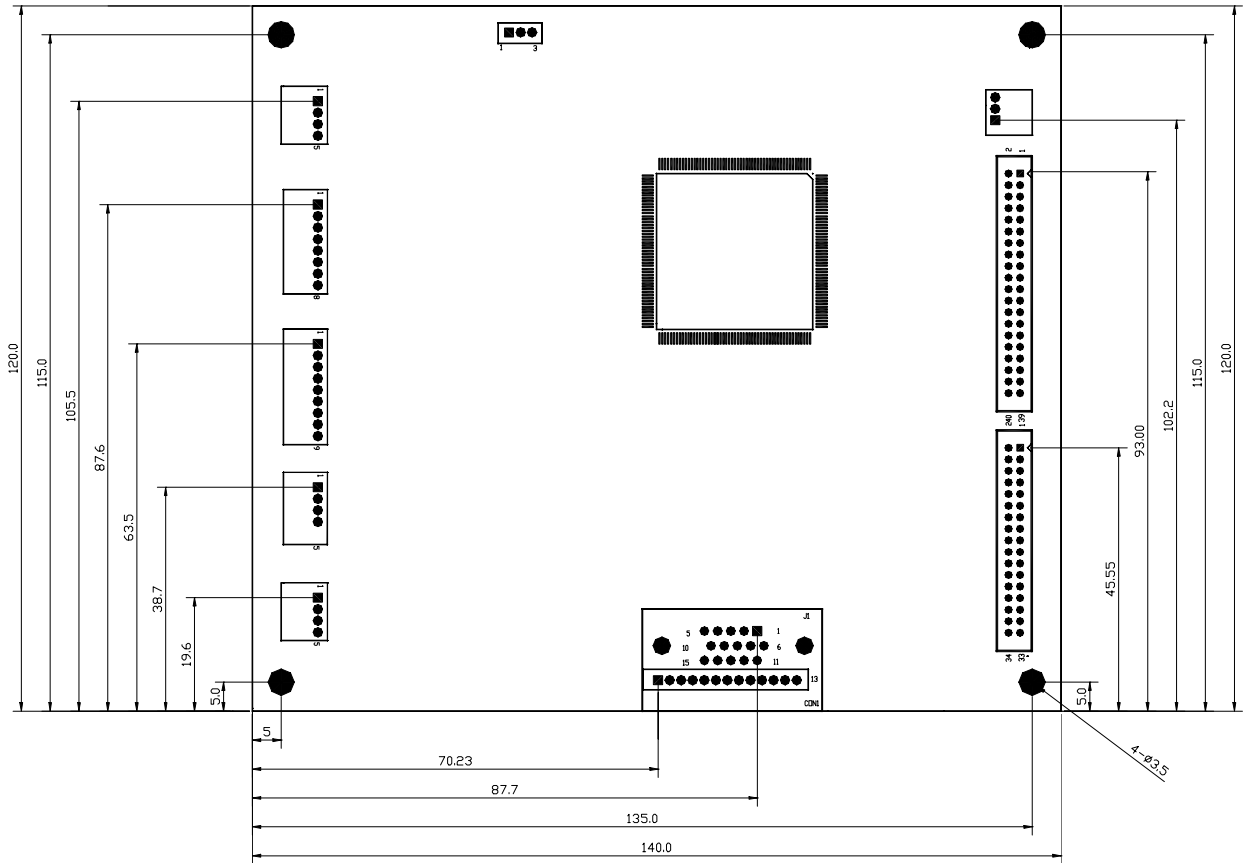
1. Click the **Right mouse button** on the empty Desktop area.
2. Select the Settings property dialog. Press the **Advanced Properties** button.
3. From the Advanced Display Properties dialog select the **Change** buttons.
4. Press the **Have disk** button from the next dialog.
5. Select the **'A' drive** from the dialog. Press OK. The wizard will automatically install the Display Drivers.
6. Follow the additional instructions given by the wizard.

Some video cards may not accept this setting. In this case, you can change the frequency in the 'advanced property' of 'display setting' window.

3. Dimensions

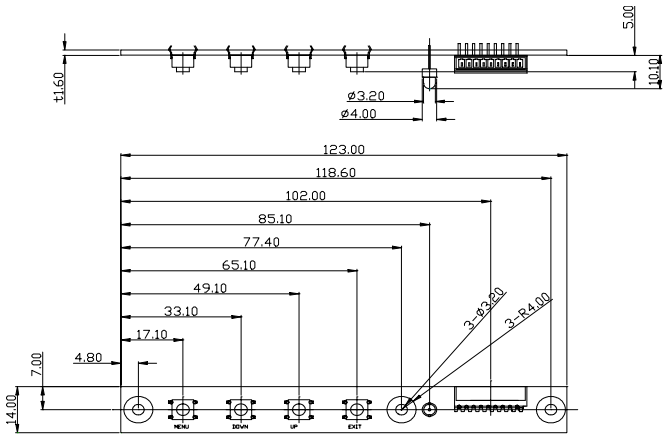
•AD Board

Unit : mm



Max height is used VGA I/F 2.
If you used VGA I/F 1, max height is 12m/m.(Coil)

•OSD Board (Option)



4. Specifications

• Supportable Mode by Resolution

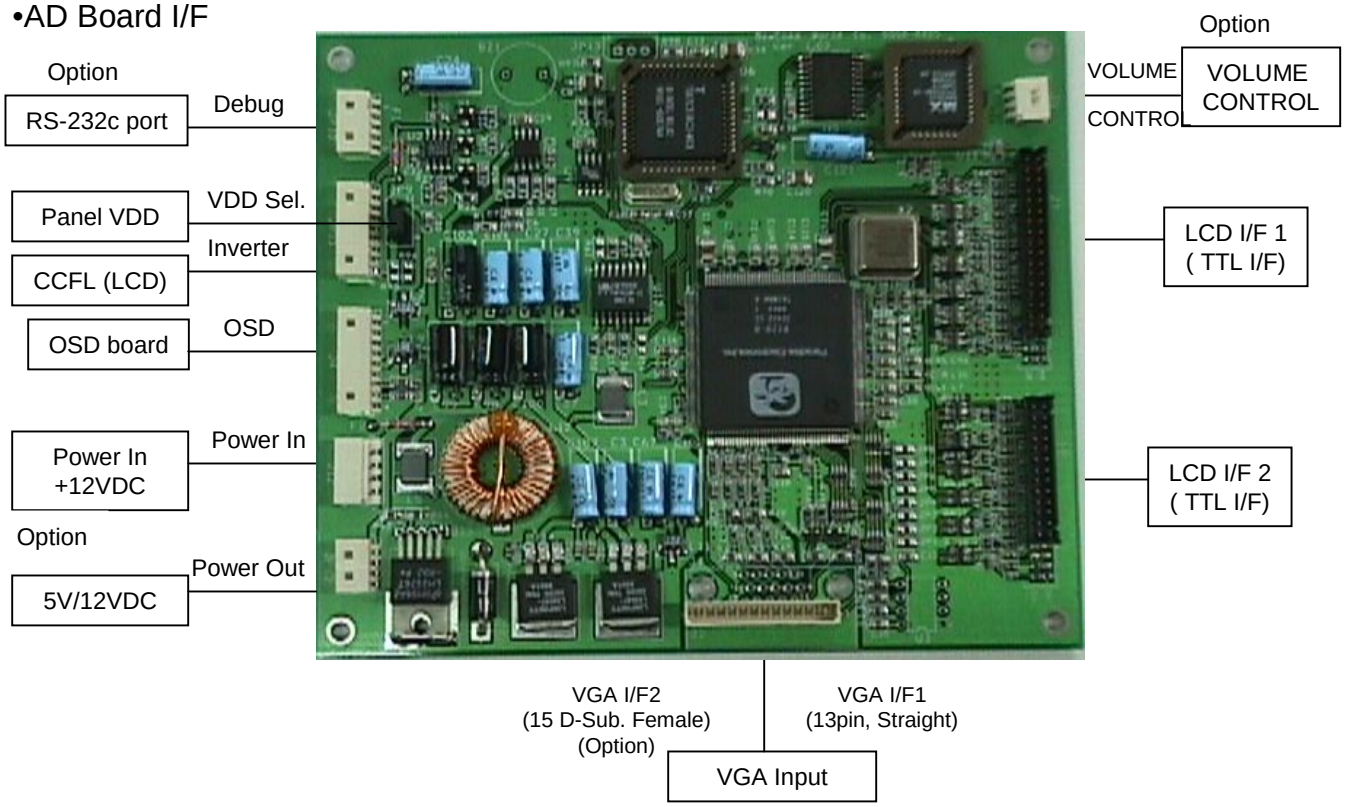
Resolution	V-Refresh	H-Refresh
IBM 640x350	70 Hz	31.46 KHz
NEC 640x400	56 Hz	24.80 KHz
IBM 640x400 *	70 Hz	31.46 KHz
IBM 720x400 *	70 Hz	31.46 KHz
IBM 640x480	60 Hz ; Standard	31.46 KHz
IBM 640x480	73 Hz	37.86 KHz
IBM 640x480	75 Hz	37.50 KHz
NEC 640x480	70 Hz	37.10 KHz
MAC 640x480	66 Hz	35.00 KHz
IBM 800x600	56 Hz	35.15 KHz
IBM 800x600	60 Hz; Standard	37.87 KHz
IBM 800x600	72 Hz	48.07 KHz
IBM 800x600	75 Hz	46.87 KHz
NEC 800x600	70 Hz	47.80 KHz
IBM 1024x768	60 Hz; Standard	48.36 KHz
IBM 1024x768	70 Hz	56.47 KHz
IBM 1024x768	75 Hz	60.02 KHz
NEC 1024x768	72 Hz	58.1 KHz

* Note : Only 1 mode can be selected at once

•TFTLCD Panel I/F : TTL (Standard), LVDS & PanelLink (Option)
•OSD Board (option) : Menu, Decrement, Increment, Exit, LED, power
• Accessory Option : See Application Note (APN-AXG5-001)
•Power Management : VESA DPMS
•Fuse : 12VDC, 3A
•Environment : Relative Humidity 5 ~ 90% Non-condensing
Operating temperature 5 ~ 40° C (41 ~ 104 ° F)
•Plug & Play : DDC1/2B
•DC Output : 12V (from AC / DC Adapter), 5V/0.6A
•Power consumption : Operating :4.0Watt Max (exclude adapter)
Stand-by : 2.3 Watt (exclude adapter)

5. Cable Connections

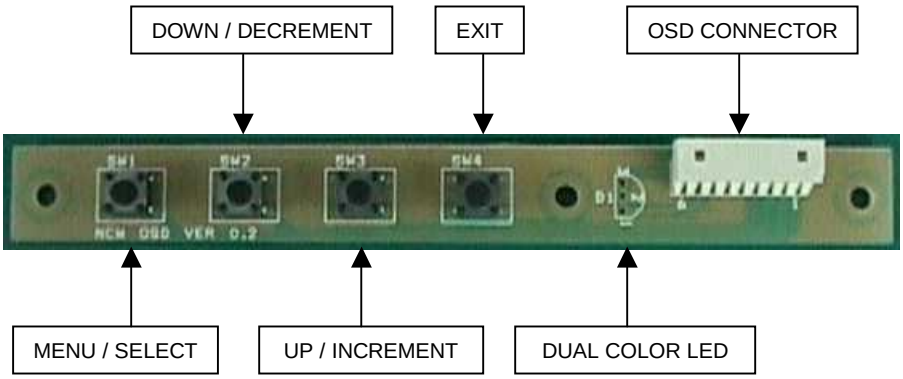
•AD Board I/F



* The Debug port can diagnostic AD board status to PC RS-232C port.
(use debug cable and serial communication program (Ex. Hyper Terminal of Win 95/98))

	Maker	P/N	Maker	P/N
VGA I/F 1	Molex	51014-1310	Molex	51004-1300
VGA I/F 2	Leoco	DHSL-15(Female)	Leoco	DHPD-15(Male)
LCD I/F 1	Hirose	DF11-34DP-2DSA	Hirose	DF11-34DS-2C
LCD I/F 2	Hirose	DF11-26DP-2DSA	Hirose	DF11-26DS-2C
Inverter	Molex	53015-0810	Molex	51004-0800
Debug	Molex	53015-0510	Molex	51004-0500
OSD	Molex	53015-0910	Molex	51004-0900
Power In	Molex	5268-04A	Molex	5264-04
Power Out	Molex	53015-0410	Molex	51004-0400
Volume Control	Molex	51014-0310	Molex	51004-0300
Panel Power	Leoco	2516P3T	Leoco	3200SU00001

•OSD Board

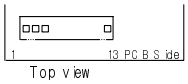


Connector	Connectors on ADB		Counter Part	
	Maker	P/N	Maker	P/N
OSD	Molex	53015-0910	Molex	51004-0900

•VGA IF pin descriptions

VGA I/F 1
Molex 53014-1310 / 51004-1300

Pin	Description
1	RED
2	R_GND
3	GREEN
4	G_GND
5	BLUE
6	B_GND
7	D_GND
8	D_GND
9	H_SYNC
10	D_GND
11	V_SYNC
12	DDA (DATA)
13	DCK (CLK)



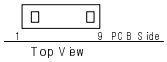
VGA I/F 2
Leoco DHSL-15 / DHPD-15

Pin	Description
1	RED
2	GREEN
3	BLUE
4	NC
5	D_GND
6	R_GND
7	G_GND
8	B_GND
9	NC
10	D_GND
11	NC
12	DDA (DATA)
13	H_SYNC
14	V_SYNC
15	DCK (CLK)

•OSD I/F pin description

Molex 53015-0910 / 51004-09000

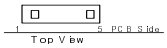
Pin	Desc.
1	MENU_SEL
2	MENU_EXIT
3	MENU_DOWN
4	MENU_UP
5	VCC
6	GND
7	LED2
8	LED1
9	GND



•Debug pin description

Molex 53015-0510 / 51004-0500

Pin	Desc.
1	TxD
2	Gnd
3	RxD
4	+5V
5	NC



•Power In I/F pin description

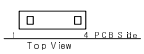
Molex 5268-04A/5264-04

Pin	Description
1	+12VDC
2	+12VDC
3	GND
4	GND

•Power Out I/F pin description

Molex 53015-0410 / 51004-0400

Pin	Description
1	+5VDC
2	GND
3	GND
4	+12VDC



•LCD I/F pin description

LCD I/F 1
Hirose DF11-40DP-2DSA / DF11-40DS-2C

Pin	Desc.
1	5.0V Panel VVD(5V/3.3V)
2	5.0V Panel VVD(5V/3.3V)
3	GND
4	FSHCLK
5	GND
6	FFLM
7	FLP
8	FDE
9	GND
10	R-E0
11	R-E1
12	R-E2
13	R-E3
14	R-E4
15	R-E5
16	GND
17	G-E0
18	G-E1
19	G-E2
20	G-E3
21	G-E4
22	G-E5
23	GND
24	B-E0
25	B-E1
26	B-E2
27	B-E3
28	B-E4
29	B-E5
30	GND
31	R-E6
32	R-E7
33	GND
34	G-E6
35	G-E7
36	GND
37	B-E6
38	B-E7
39	GND
40	GND

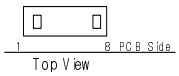
LCD I/F 2
Hirose DF11-34DP-2DSA / DF11-34DS-2C

Pin	Desc.
1	GND
2	R-O0
3	R-O1
4	R-O2
5	GND
6	R-O3
7	R-O4
8	R-O5
9	GND
10	G-O0
11	G-O1
12	G-O2
13	GND
14	G-O3
15	G-O4
16	G-O5
17	GND
18	B-O0
19	B-O1
20	B-O2
21	GND
22	B-O3
23	B-O4
24	B-O5
25	GND
26	R-O6
27	R-O7
28	GND
29	G-O6
30	G-O7
31	GND
32	B-O6
33	B-O7
34	GND

•Inverter I/F pin description

Molex 53015-0810 / 51004-0800

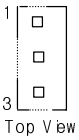
Pin	Desc.
1	12VSAFE
2	12VSAFE
3	GND
4	BRT_ADJ
5	GND
6	INV_ON/OFF
7	GND
8	5V/3.3V



•Volume control I/F Pin description

Molex 53014-0300 / 51004-0300

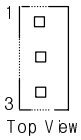
Pin	Description
1	BIT1
2	BIT2
3	VCC



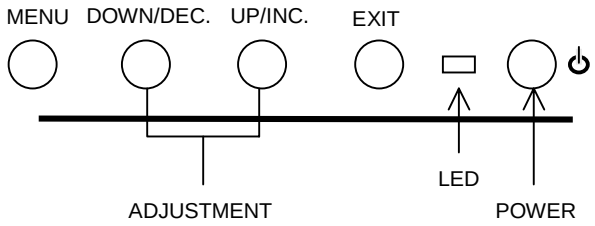
•Panel power select pin description

Leoco 2516P3T / 3200SU00001

Pin	Description
1	+3.3V
2	Panel Power out
3	+5.0V



6. OSD (Example)

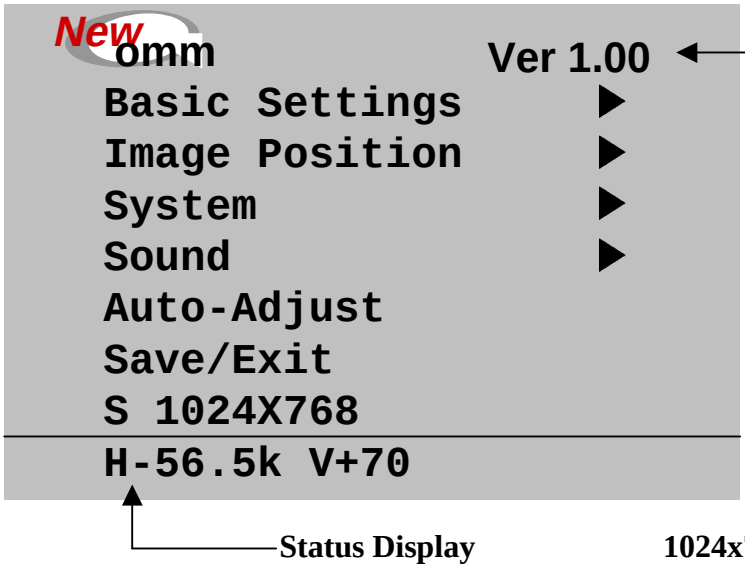


MODE	LED Operation	
Power off	-	-
No signal	Red	Always on
Suspend / Stand-by	Amber	Blink
Power on	Green	Always on

MENU Menu on/off. & Select.
EXIT Save & Exit
ADJUSTMENT Scroll menu bar. Increase/Decrease setting value.
POWER LCD monitor power on/off

7. OSD Menu and Set-up Procedure

•Main Menu

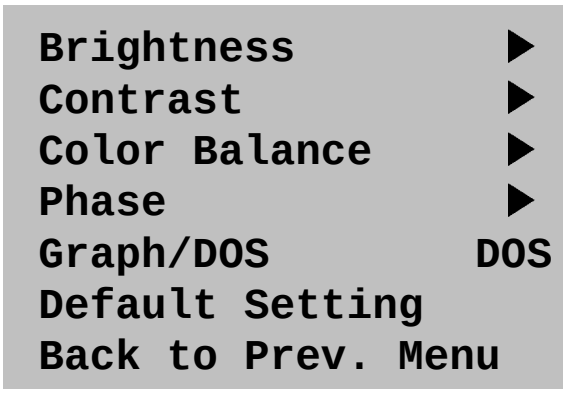


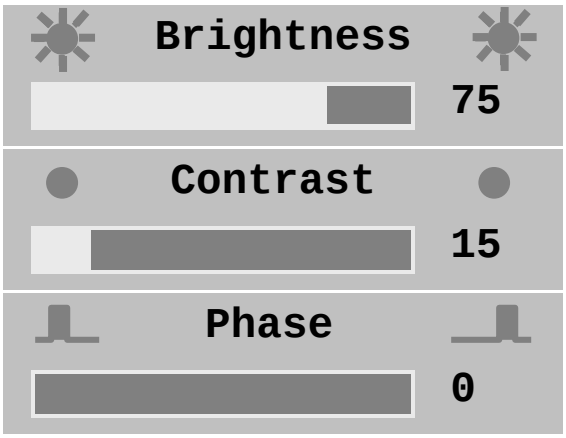
BIOS Revision No.

1024x768 H-56.5k V+70

S : Standard mode**, U :** User mode
1024x768 : Display mode
H-56.5k : Horizontal clock rate in KHz
V+70 : Vertical clock rate in Hz
+ : Positive polarity sync.
- : Negative polarity sync.

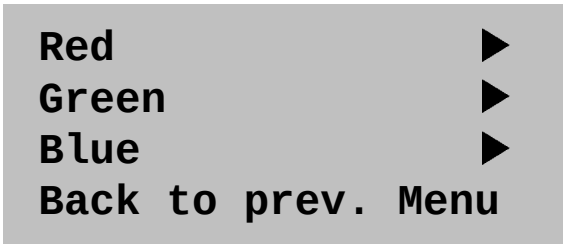
•Basic Settings



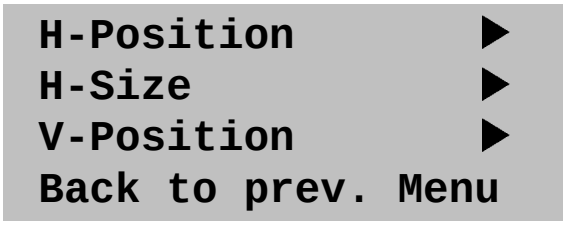


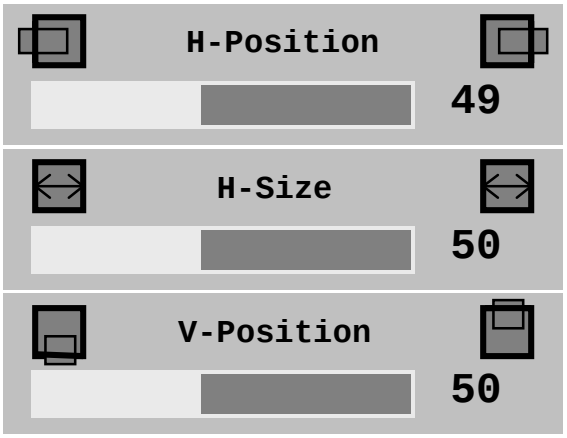
Brightness	Image brightness control
Contrast	Image contrast control
Color Balance	Individual contrast control menu for Red, Green and Blue.
Phase	Image sharpness control and noise elimination
Graph/DOS	DOS mode select (640x400, 720x400)
Default setting	Cancel user's setting and return to factory setting
Back to Prev. Menu	Return to previous menu

Color Balance Sub-menu



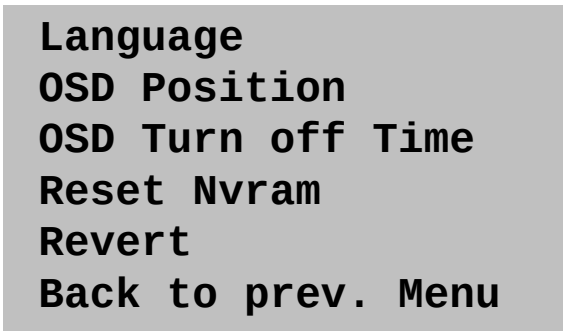
•Image Position

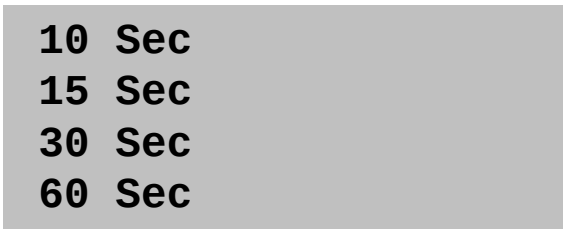




Horizontal Position	Image H-position control
Horizontal Size	Image width control
Vertical Position	Image V-position control
Back to prev. menu	Return to previous menu

•System





Language	Language selection for OSD menu
OSD Position	OSD menu location
OSD Turn off Time	OSD lasting time
Reset Nvram	Nvram data reset and initial
Revert	Abort adjust data
Back to prev. Menu	Return to previous menu

•Auto-Adjust

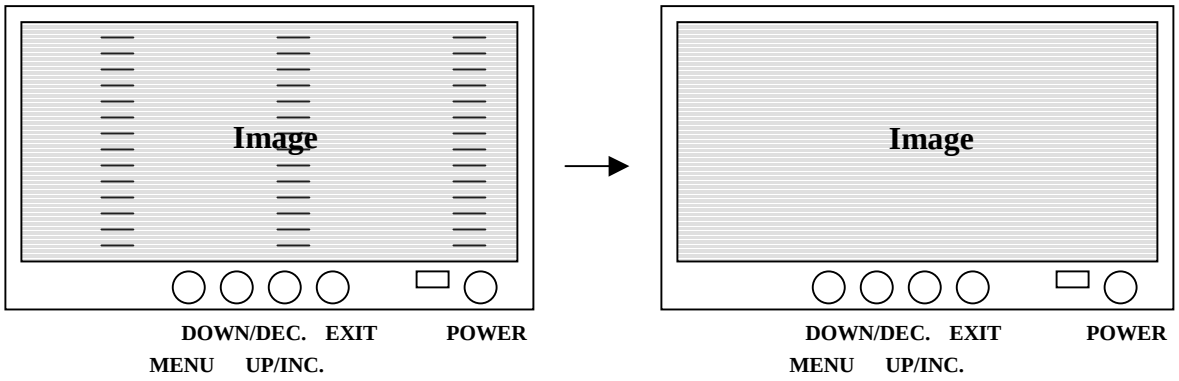
When you select Auto-Adjustment, the monitor checks present VGA signal and fine tune display quality automatically include screen positions, size and phase adjustment. The best pattern for this function is 'Windows Shutdown' mode.

*** Please do not use this function in DOS mode, black background or moving image mode. The monitor can be subjected to halt. If you encountered to this phenomenon, please reset OSD by selecting 'BASIC SETTING -DEFAULT SETTINGS' menu or press Inc. and Dec. button together when OSD is not activate on the screen. Then your monitor will go back to 'Factory Default' setting.**

•OSD setting procedure

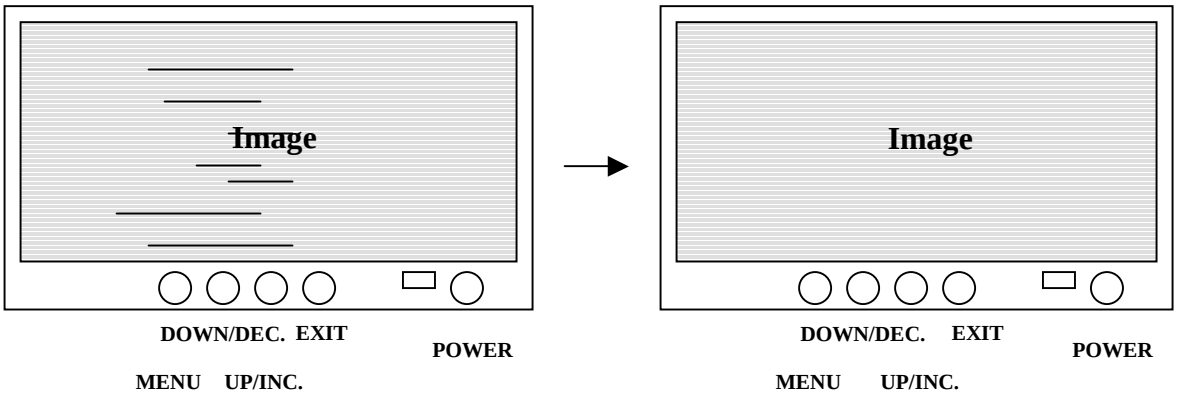
[Horizontal Size Adjustment]

1. Press '**MENU'** button to display OSD main menu.
2. Move scroll bar to '**IMAGE POSITION'** and then press **'MENU'** button
3. Move scroll bar to '**H-SIZE'** and then press **'MENU'** button
4. Pressing **'DEC.'** or **'INC.'** button, adjust horizontal size to fill display area.
   ☛ *If horizontal size of your image is not fine tuned, you may observe periodic vertical noisy bars on your image. This noisy bars can be disappeared by adjusting horizontal size.*
5. Select **'Save / Exit'** menu to save current setting.
   Or Press **'EXIT'** button to save current setting & exit OSD MENU.



[Phase Adjustment]
1. Press '**MENU'** button to display OSD main menu.
2. Move scroll bar to '**BASIC SETTING'** and then press **'MENU'** button
3. Move scroll bar to **'PHASE'** and then press **'MENU'** button
4. Pressing **'DEC'** or **'INC'** button, remove noise and sharpen the image.
   - ☛ *If the phase of your monitor is not fine tuned, you may observe unstable horizontal noisy lines and horizontal crosstalks stretching from the edge of small widows on your display. These noises can be disappeared by adjusting phase.*
   - ☛ *If you change your display to '**Windows shut down mode'**, you can adjust it easily. (click '**start**' icon at the bottom right side, then click '**windows shutdown'**. You can enter to '**windows shutdown mode'**. After finishing phase adjustment, click '**no**' of the shutdown window to return to original windows display.)*
5. Select **'Save / Exit'** menu to save current setting.
   Or Press **'EXIT'** button to save current setting & exit OSD MENU.

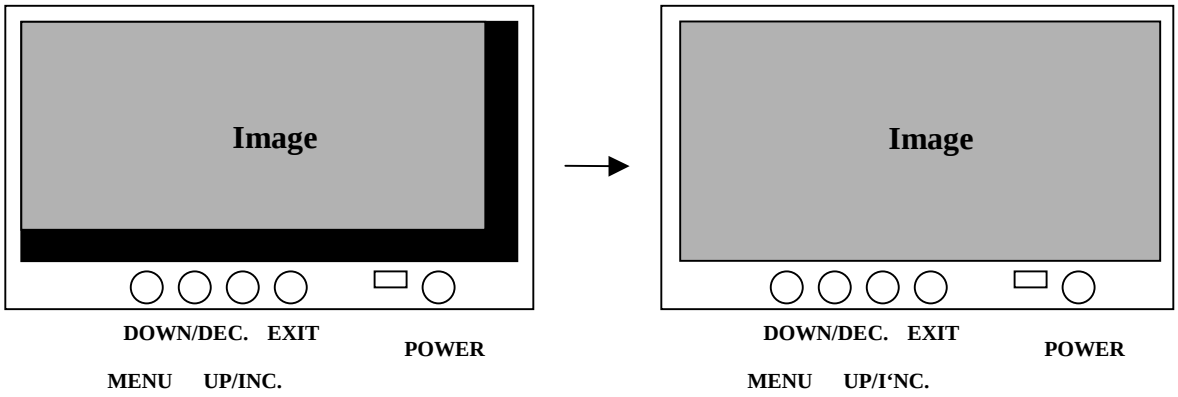
If you do **'AUTO ADJUSTMENT'** the monitor will try to fine out the best condition of phase setting. But depends on the display contents, it could not find the best setting. If you are not satisfied with the auto adjustment, please fine tune the phase manually as described above.



[Brightness and Contrast Adjustment]
1. Press '**MENU'** button to display OSD main menu.
2. Move scroll bar to '**BASIC SETTING'** and then press **'MENU'** button
3. Move scroll bar to '**BRIGHTNESS'** or '**CONTRAST'** and then press **'MENU'** button
4. Pressing **'DEC'** or **'INC'** button, you can adjust your image.
5. Press **'MENU'** button to save current setting and move to previous menu.
   Or Press **'EXIT'** button to save current setting & exit OSD MENU.

[Horizontal and Vertical Position Adjustment]
1. Press '**MENU'** button to display OSD main menu.
2. Move scroll bar to '**IMAGE POSITION'** and then press **'MENU'** button
3. Move scroll bar to '**HORIZONTAL POSITION'** or '**VERTICAL POSITION'** and then press **'MENU'** button
4. Pressing **'DEC'** or **'INC'** button, you can locate your image to the center of your display.
5. Select **'Save / Exit'** menu to save current setting.
   Or Press **'EXIT'** button to save current setting & exit OSD MENU.

You can use 'AUTO ADJUSTMENT' OSD menu to adjust the image size and position in WINDOWS mode automatically.



[**Other Adjustment**]
You can modify your OSD menu according to your preference. The procedure is:
Main menu → System → Language / OSD Position / OSD Turn off time
You can monitor the input signal status in the status display row of System menu window.

[**Volume control**]
Pressing 'DEC' or 'INC' button when OSD is not activated on the screen.
You can control audio volume.

artistage

APN-AXG5-001
(Preliminary)

Application Note :
SOSA-AXG5 Accessory Option

October 1999

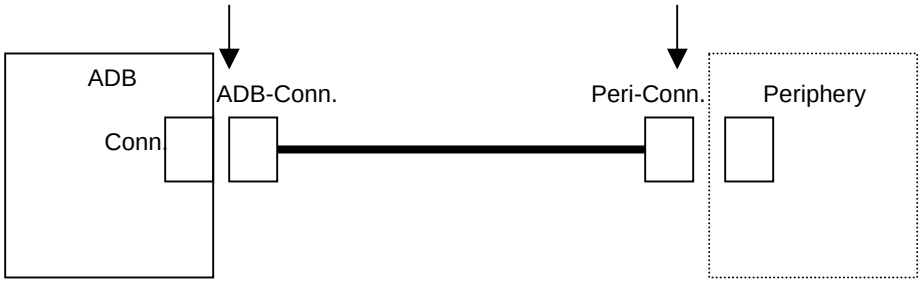
NEW COMM WORLD Co., Ltd.

3rd fl, Songsan Bldg, 381
Songnae-Dong, Sosa-Gu,
Puchon-Si, Kyunggi-Do,
422-042 Korea

Tel (82)-32-652-8782
Fax (82)-32-652-8785

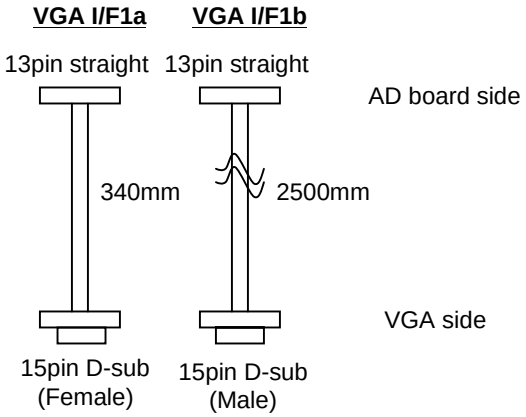
•Harness Options

Harness	Harness : ADB-Connector		Harness : Periphery-Connector		Length
	Maker	P/N	Maker	P/N	(m/m)
VGA I/F 1a	Molex	51004-1300	Leoco	DHSD-15 (Femail)	340
VGA I/F 1b	Molex	51004-1300	Leoco	DHPD-15(Mail)	2500
VGA I/F 2	Leoco	DHPD-15(Mail)	Leoco	DHPD-15(Mail)	1800
LCD I/F 1a	Hirose	DF11-34DS-2C	Hirose	DF14-30S-1.25C	130
LCD I/F 1b	Hirose	DF11-34DS-2C	Hirose	DF9B-41S-1V	250
LCD I/F 2	Hirose	DF11-26DS-2C	Hirose	DF14-25S-1.25C	130
Inverter 1	Molex	51004-0800	Molex	51021-1200	140
Inverter 2	Molex	51004-0800	Hanlim	CH0500-05	140
Debug	Molex	51004-0500	KiWon	KW-5SP-L	450
OSD	Molex	51004-0900	Molex	51004-0900	250
Power In 1 (PCB)	Molex	5264-04	Shiuachyuan	SCD-014-1-A	330
Power In 2 (Plug)	Molex	5264-04	DuckKwang Elec.	DC jack 2.5φ (Plug)	160
Power Out	Molex	51004-0400			
Volume Control	Molex	51004-0300			



*1 : SAMSUNG TFT LCD MODEL (LT150X1-151)
*2 : LG TFT LCD MODEL (LM151X2)
*3 : SAMSUNG DC/AC INVERTER MODEL (SIC-141)
*4 : ILSAN DC/AC INVERTER MODEL (ISI-1502)

VGA I/F Option



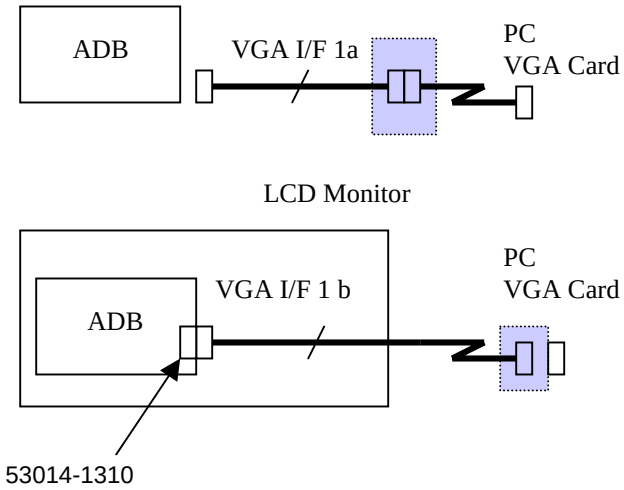
•VGA I/F

VGA I/F 1a (P/N : 13113155120) / VGA I/F 1b (P/N 51115182020)

Harness : VGA I/F 1
Molex 51004-1300

Monitor out / PC VGA Out
Lelco DHSD-15 (VGA I/F 1a) / DHPD-15 (VGA I/F 1b)

Pin	Description	Pin	Description
1	RED	1	RED
2	R GND	2	GREEN
3	GREEN	3	BLUE
4	G_GND	4	NC
5	BLUE	5	D_GND
6	B_GND	6	R_ GND
7	D_GND	7	G_ GND
8	D_GND	8	B_GND
9	H_SYNC	9	NC
10	D_GND	10	D_GND
11	V_SYNC	11	D_GND
12	DDA	12	DDA
13	DCK	13	V_SYNC
		14	H_SYNC
		15	DCK

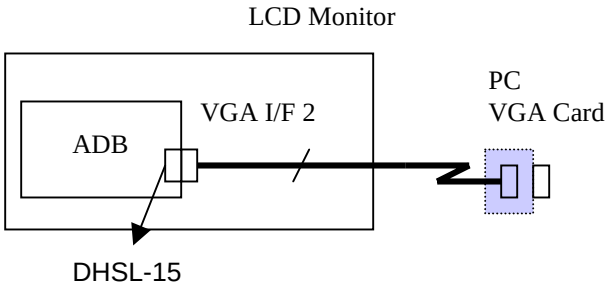


VGA I/F 2 (P/N : 51100252020)

Harness : ADB.-VGA I/F 2
Leoco DHPD-15

PC : VGA Out
Leoco DHPD-15

Pin	Description	Pin	Description
1	RED	1	RED
2	GREEN	2	GREEN
3	BLUE	3	BLUE
4	NC	4	NC
5	D_GND	5	D_GND
6	R_GND	6	R_GND
7	G_GND	7	G_GND
8	B_GND	8	B_GND
9	NC	9	NC
10	D_GND	10	D_GND
11	D_GND	11	D_GND
12	DDA	12	DDA
13	H_SYNC	13	H_SYNC
14	V_SYNC	14	V_SYNC
15	DCK	15	DCK



•LCD I/F for SAMSUNG LT150X1-151

LCD I/F1a (P/N : 13130341120)

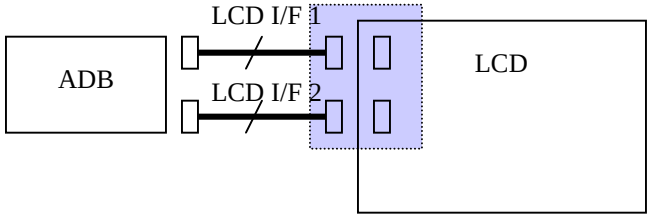
Harness : ADB LCD I/F 1 LCD : Connector
Hirose DF14-30S-1.25C Hirose DF14A-30P-1.25H

Pin	Desc.	Pin	Desc.
1	5.0V / 3.3V	1	VDD (+5VDC)
2	5.0V / 3.3V	2	VDD (+5VDC)
3	GND	3	GND
4	FSHCLK	4	MCLK
5	GND	5	GND
6	FFLM	6	VSYNC
7	FLP	7	HSYNC
8	FDE	8	DE
9	GND	9	GND
10	R_E0	10	R0_ODD
11	R_E1	11	R1_ODD
12	R_E2	12	R2_ODD
13	R_E3	13	R3_ODD
14	R_E4	14	R4_ODD
15	R_E5	15	R5_ODD
16	GND	16	GND
17	G_E0	17	G0_ODD
18	G_E1	18	G1_ODD
19	G_E2	19	G2_ODD
20	G_E3	20	G3_ODD
21	G_E4	21	G4_ODD
22	G_E5	22	G5_ODD
23	GND	23	GND
24	B_E0	24	B0_ODD
25	B_E1	25	B1_ODD
26	B_E2	26	B2_ODD
27	B_E3	27	B3_ODD
28	B_E4	28	B4_ODD
29	B_E5	29	B5_ODD
30	GND	30	GND
31	R_E6		
32	R_E7		
33	GND		
34	G_E6		
35	G_E7		
36	GND		
37	B_E6		
38	B_E7		
39	GND		
40	GND		

LCD I/F2 (P/N : 13125261120)

Harness : ADB LCD I/F 1 LCD : Connector
Hirose DF14-25S-1.25C Hirose DF14A-25P-1.25H

Pin	Desc.	Pin	Desc.
1	GND	1	GND
2	R_O0	2	R0_EVEN
3	R_O1	3	R1_EVEN
4	R_O2	4	R2_EVEN
5	GND	5	GND
6	R_O3	6	R3_EVEN
7	R_O4	7	R4_EVEN
8	R_O5	8	R5_EVEN
9	GND	9	GND
10	G_O0	10	G0_EVEN
11	G_O1	11	GR1_EVEN
12	G_O2	12	G2_EVEN
13	GND	13	GND
14	G_O3	14	G3_EVEN
15	G_O4	15	G4_EVEN
16	G_O5	16	G5_EVEN
17	GND	17	GND
18	B_O0	18	B0_EVEN
19	B_O1	19	B1_EVEN
20	B_O2	20	B2_EVEN
21	GND	21	GND
22	B_O3	22	B3_EVEN
23	B_O4	23	B4_EVEN
24	B_O5	24	B5_EVEN
25	GND	25	GND
26	R_O6		
27	R_O7		
28	GND		
29	G_O6		
30	G_O7		
31	GND		
32	B_O6		
33	B_O7		
34	GND		



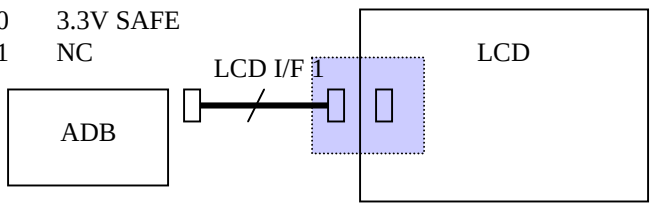
•LCD I/F for LG LM151X2

LCD I/F 1b (P/N : 13134413120)

Harness : ADB LCD I/F 1
Hirose
DF14-30S-1.25C

LCD : Connector
Hirose
DF14A-41P-1.25H

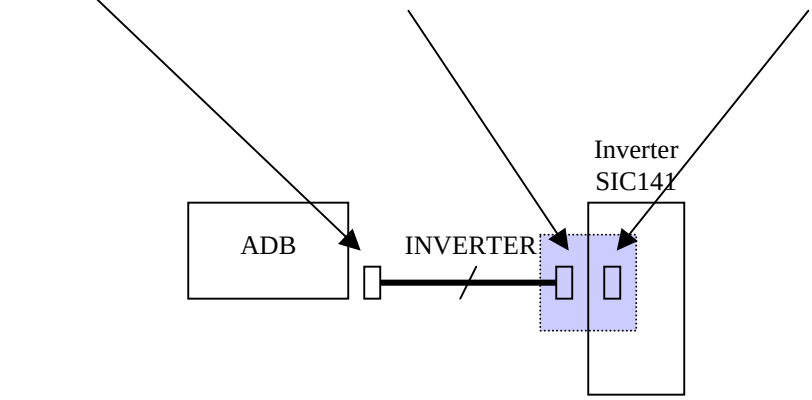
Pin	Desc.	Pin	Desc.
1	5.0V / 3.3V	1	GND
2	5.0V / 3.3V	2	DCLK
3	GND	3	GND
4	FSHCLK	4	HSYNC
5	GND	5	VSYNC
6	FFLM	6	GND
7	FLP	7	GND
8	FDE	8	GND
9	GND	9	R0
10	R_E0	10	R1
11	R_E1	11	R2
12	R_E2	12	GND
13	R_E3	13	R3
14	R_E4	14	R4
15	R_E5	15	R5
16	GND	16	GND
17	G_E0	17	GND
18	G_E1	18	GND
19	G_E2	19	G0
20	G_E3	20	G1
21	G_E4	21	G2
22	G_E5	22	GND
23	GND	23	G3
24	B_E0	24	G4
25	B_E1	25	G5
26	B_E2	26	GND
27	B_E3	27	GND
28	B_E4	28	GND
29	B_E5	29	B0
30	GND	30	B1
31	R_E6	31	B2
32	R_E7	32	GND
33	GND	33	B3
34	G_E6	34	B4
35	G_E7	35	B5
36	GND	36	GND
37	B_E6	37	DTMG
38	B_E7	38	NC
39	GND	39	3.3V SAFE
40	GND	40	3.3V SAFE
		41	NC



•INVERTER 1 (P/N 13108051120) (for SAMSUNG SIC-141, use with LM150X1-151)

***REFER TO THE INVERTER SPECFICATION**

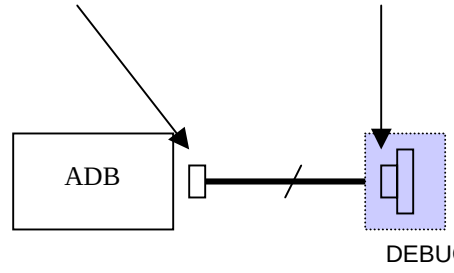
Harness : ADB.-Inverter. Molex 51004-0800		Inverter : Connector Molex 51021-1200		Inverter : Connector Molex 53261-1290	
Pin	Desc.	Pin	Desc.	Pin	Desc.
1	12VSAFE	1	NC	1	NC
2	12VSAFE	2	0 ~ 5 V	2	0 ~ 5 V
3	GND	3	NC	3	NC
4	BRT_ADJ	4	BL ON/OFF	4	BL ON/OFF
5	GND	5	NC	5	NC
6	INV_ON/OFF	6	GND	6	GND
7	GND	7	NC	7	NC
8	NC	8	GND	8	GND
		9	GND	9	GND
		10	DC_IN	10	DC_IN
		11	DC_IN	11	DC_IN
		12	NC	12	NC



*** RECOMMENDED INVERTER :**
SAMSUNG ELECTRO-MECHANIC SIC141

•DEBUG (P/N 13105007120)

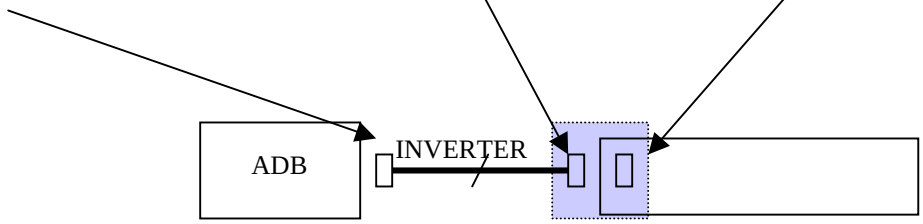
Harness : ADB Debug Molex 51004-0500		Harness : Debug KiWon KW-5SP-L	
Pin	Desc.	Pin	Desc.
1	TxD	1	TxD
2	Gnd	2	RxD
3	RxD	3	NC
4	+5V	4	Gnd
5	NC	5	+5V



•INVERTER 2 (P/N 131081201200) (for ILSAN ISI-1502, use with LT151X2)

***REFER TO THE INVERTER SPECFICATION**

Harness : ADB.-Inverter. Molex 51004-0800		Inverter : Connector Hanlim AW0500-05		Inverter : Connector Hanlim Ch0500-05	
Pin	Desc.	Pin	Desc.	Pin	Desc.
1	12VSAFE	1	DC_IN	1	DC_IN(+12V)
2	12VSAFE	2	GND	2	GND
3	GND	3	BRT-ADJ	3	BRT_ADJ(0~5V)
4	BRT_ADJ	4	GND	4	GND
5	GND	5	ON/OFF	5	ON/OFF(0/5V)
6	INV_ON/OFF				
7	GND				
8	3.3V				

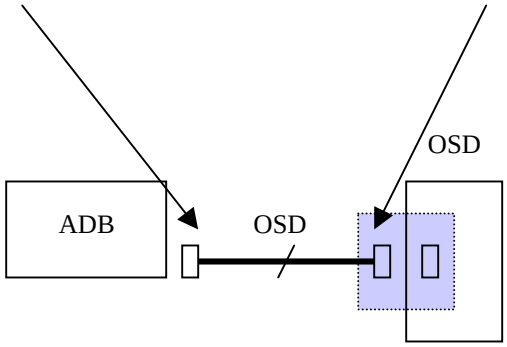


Inverter
ISI-1502

*** RECOMMENDED INVERTER :**
ILSAN ELECOM ISI-1502

•OSD (P/N 13109093120)

Harness : ADB.-OSD Molex 51004-0900		OSD Board : Connector Molex 51004-0900	
Pin	Desc.	Pin	Desc.
1	MENU_SEL	1	MENU_SEL
2	MENU_EXIT	2	MENU_EXIT
3	MENU_DOWN	3	MENU_DOWN
4	MENU_UP	4	MENU_UP
5	VCC	5	VCC
6	GND	6	GND
7	LED2	7	LED2
8	LED1	8	LED1
9	GND	9	GND



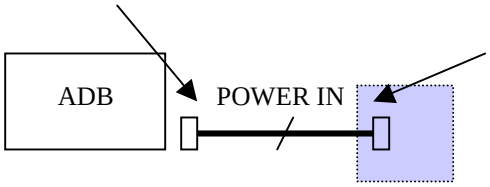
•POWER IN 1

Harness : ADB.-Power In
MOLEX 5264-04

Pin	Description
1	+12VDC
2	+12VDC
3	GND
4	GND

Harness : Peri.-Power In
SHIUACHYUAN SCD-014-1-A

Pin	Description
1	+12VDC
2	NC
3	GND



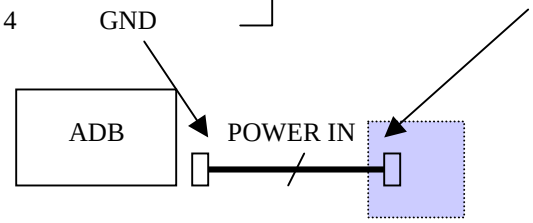
•POWER IN 2 (P/N : 13102002120)

Harness : ADB.-Power In
MOLEX 5239-02

Pin	Description
1	+12VDC
2	+12VDC
3	GND
4	GND

Harness : Peri.-Power In
DUCKKWANG DC JACK 2.5Φ

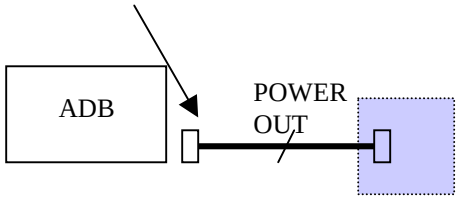
Pin	Description
PIN	+12VDC
PIPE	GND



•POWER OUT

Harness : ADB.-Power Out
Molex 51004-0400

Pin	Description
1	+5VDC
2	GND
3	GND
4	+12VDC



•VOLUME CONTROL

Harness : ADB-Volume Control
Molex : 51004-0300

Harness : Peri-Volume Control
Molex : 51004-0300

Pin	Description
1	BIT1
2	BIT2
3	GND

Pin	Description
1	BIT1
2	BIT2
3	GND